

ADDITIONS TO THE ACANTHACEAE OF ARIZONA.— Two species of Acanthaceae are reported from Arizona for the first time. Both *Carlowrightia texana* and *Ruellia parryi* have been collected recently in Chihuahuan desertscrub in the southeastern portion of the state (Cochise County). Illustrations of both species and identification keys for all species of *Carlowrightia* and *Ruellia* in Arizona are provided. Fifteen species of Acanthaceae are now recognized as native to the state.

***Carlowrightia texana* Henr. & T.F. Daniel, Madroño 26:27. 1979.**

ARIZONA: **Cochise Co.:** San Pedro Riparian National Conservation Area, Upper San Pedro River floodplain near old Tombstone River gauge, ca. 2 mi N of Hwy. 82, 31°45.244'N, 110°12.87'W, 6 Sep 2002, *E. Makings* 1299 (ASU).

This represents the first collection of the species in Arizona, where it is infrequent on a rocky granite substrate at 1153 meters elevation in Chihuahuan desertscrub dominated by *Acacia greggii*, *Larrea tridentata*, *Rhus microphylla*, *Prosopis velutina*, *Flourensia cernua*, *Talinum angustissimum*, and *Acourtia wrightii*. The locality in western Cochise County represents the westernmost known occurrence of the species. A detailed description *C. texana* was provided by Daniel (1983); illustrations of the species are available in the protologue (Henrickson and Daniel 1979) and in Powell (1988); its pollen was figured in Daniel (2004); and Figure 1 shows some of the major morphological attributes of this taxon. It can be distinguished from other species of *Carlowrightia* in Arizona by the following key:

1. Shrubs to 2 m tall; corolla purplish, lower-central lobe not keel-like or enclosing stamens; anthers yellow; leaves sessile to subsessile, lamina linear, 4–35 times longer than wide, mid-vein only evident; head of capsule subglobose to partially flattened. *C. linearifolia*
1. Perennial herbs, usually less than 1 m tall; corolla white (often with colored markings or veins), lower-central lobe keel-like, at least partially enclosing stamens; anthers maroon (turning blackish); leaves generally petiolate, lamina lanceolate to ovate to cordate to elliptic, 1–3.7 (–5.3) times longer than wide, several orders of venation evident; head of capsule distinctly flattened laterally.
 2. Corolla 8–18 mm long, upper lip with a yellow “eye” surrounded by maroon markings; bracteoles subulate to triangular, 0.3–1.3 mm wide; seed margin dentate; Sonoran desertscrub *C. arizonica*
 2. Corolla 5.5–7 mm long, upper lip lacking a yellow “eye,” veins of all lobes usually maroon; bracteoles foliaceous, usually petiolate, ovate to elliptic-lanceolate, 0.7–5 mm wide; seed margin entire; Chihuahuan desertscrub *C. texana*

Carlowrightia texana occurs in Chihuahuan desertscrub, mesquite woodlands, and oak-juniper woodlands in the southern United States (Arizona, New Mexico, Texas) and northern Mexico (Chihuahua, Coahuila, Nuevo León, San Luis Potosí, Sonora). Plants have been collected at elevations from 25 to 1700 meters. Throughout its range, *C. texana* flowers from March until November. Arizona plants flowered in September (possibly in response to summer monsoonal rainfall). In Arizona the species is undoubtedly rare, but it likely occurs elsewhere among the isolated regions of Chihuahuan desertscrub in the southeastern portion of the state. The nearest known occurrence of *C. texana* to that reported here is about 75 km to the southeast in northeastern Sonora, Mexico, from which state the species was recently (Daniel 2004) reported for the first time.

***Ruellia parryi* A. Gray, Syn. Fl. N. Amer. 2(1):326. 1878.**

ARIZONA: **Cochise Co.:** S-facing slopes of big limestone hill, N of Guadalupe Canyon Road, 31°21'01"N, 109°06'54"W, 1372 m, 8 Apr 2001, *M. Chamberland* 1900 (ARIZ).

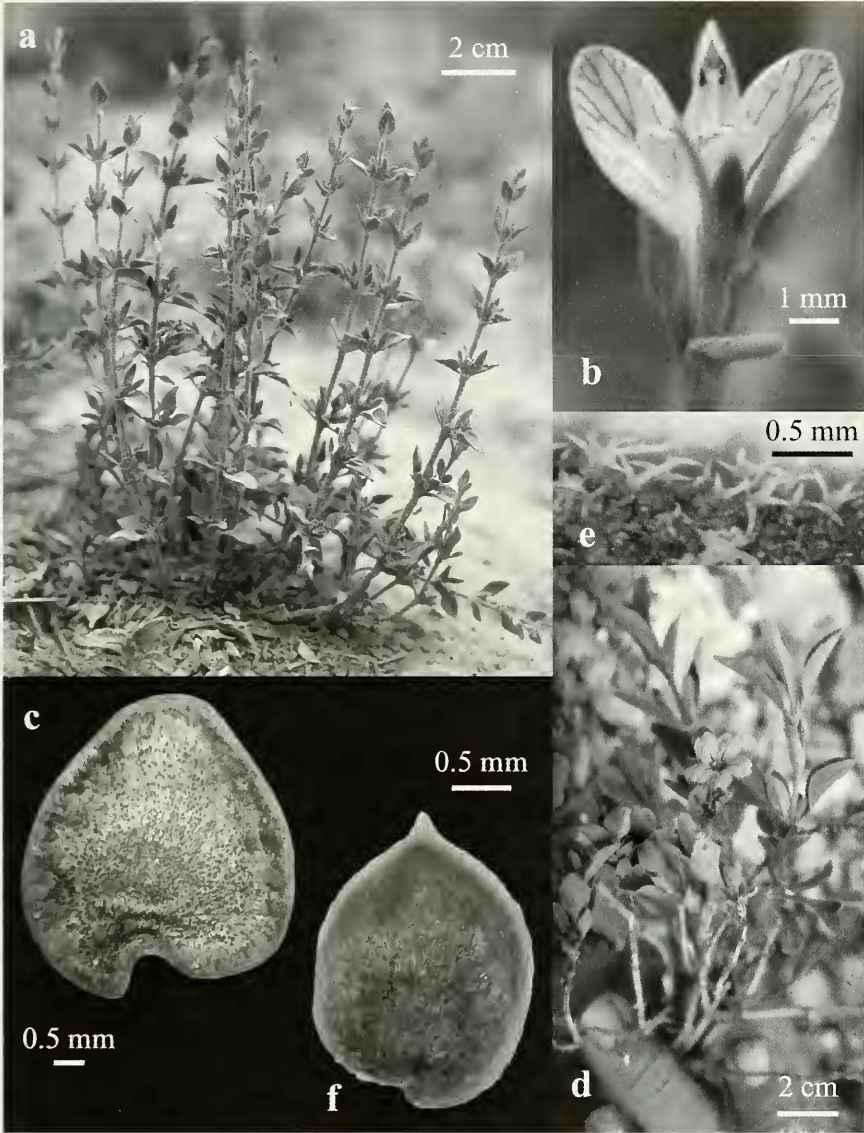


FIGURE 1. *Carlowrightia texana* (a–c) and *Ruellia parryi* (d–f). a. Habit (Daniel 100). b. Flower from above (Daniel 108). c. Seed (McVaugh 8204). d. Habit with flower (Daniel 581). e. Branched trichomes from leaf surface (Reina G. et al. 2003-957). f. Seed (Breedlove & Mahoney 71916).

Ruellia parryi (Fig. 1) is reported here for the first time from Arizona, where it occurs in southeastern Cochise County. Daniel (1984, 2004) provided descriptions of *R. parryi*; its pollen was figured in Daniel (2004); and illustrations of the species can be found in Vines (1960), Wasshausen (1966), and Powell (1988). The species occurs in the southwestern United States (Arizona, New Mexico, western Texas) and northern Mexico (Chihuahua, Coahuila, Durango, Nuevo León, Sonora, Zacatecas). Plants occur on limestone in Chihuahuan desertscrub and juniper chaparral at elevations from 500 to 1950 meters. Throughout its geographic range flowering takes place from March through October. In Arizona, flowering plants were collected in April from a region of

Chihuahuan desertscrub (associated species: *Fouquieria splendens*, *Atriplex canescens*, *Quercus pungens*, *Rhus microphylla*, *Teconia stans*, *Salvia parryi*). *Ruellia parryi* was also recently collected in northeastern Sonora for the first time (Daniel 2004), about 45 km southwest of its occurrence in Arizona. The two species of *Ruellia* known from Arizona can be distinguished as follows:

1. Herbs from woody caudex; leaves 20–170 mm long, 10–90 mm wide, attenuate at base, surfaces lacking any branched or stellate trichomes; inflorescence of (1–) 3– many-flowered dichasia borne on peduncles up to 85 mm long from axils of leaves or distal bracts; calyx (9–) 11–25 mm long, anterior lobes not fused for half or more of their length; corolla lobes 10–12 mm long; capsule 12–22 mm long, glandular pubescent; seeds 3–4 mm long. *R. nudiflora*
1. Subshrubs; leaves 9–35 mm long, 3–15 mm wide, acute at base, surfaces with at least some trichomes branched or stellate; inflorescence of 1 (–3)-flowered dichasia borne on peduncles 0.5–6 mm long from leaf axils; calyx 6–11 mm long, anterior lobes fused for half or more of their length; corolla lobes 5–10 mm long; capsule 10–13 mm long, eglandular; seeds 2.5–3 mm long. *R. parryi*

Fifteen species of Acanthaceae are now known to occur in Arizona: *Anisacanthus thurberi*, *Carlowrightia arizonica*, *C. linearifolia*, *C. texana*, *Dicliptera resupinata*, *Dyschoriste decumbens*, *Elytraria imbricata*, *Henrya insularis*, *Justicia californica*, *J. candicans*, *J. longii*, *J. sonorae*, *Ruellia nudiflora*, *R. parryi*, and *Tetramerium nervosum*. The distributions of all of these species in the state are either concentrated in or restricted to the southern counties. Among counties in the state, Cochise County in southeastern Arizona has the most species of Acanthaceae (12). This county also possesses nearly all of the Chihuahuan desertscrub in the state. The recent collections of both *Carlowrightia texana* and *Ruellia parryi* in southeastern Arizona and northeastern Sonora (Daniel 2004) suggest that additional botanical exploration of the isolated regions of Chihuahuan desertscrub in these states is warranted. *Stenandrium barbatum* is another species of Acanthaceae that might be expected to occur in southeastern Arizona and/or northeastern Sonora based on its known occurrence in western portions of the Chihuahuan Desert in New Mexico and Chihuahua (Daniel 1985).

LITERATURE CITED

- DANIEL, T.F. 1983. *Carlowrightia* (Acanthaceae). *Flora Neotropica* 34:1–116.
- DANIEL, T.F. 1985. A revision of *Stenandrium* (Acanthaceae) in Mexico and adjacent regions. *Annals of the Missouri Botanical Garden* 71:1028–1043.
- DANIEL, T.F. 2004. Acanthaceae of Sonora: taxonomy and phytogeography. *Proceedings of the California Academy of Sciences* 55:692–807.
- HENRICKSON, J., AND T.F. DANIEL. 1979. Three new species of *Carlowrightia* (Acanthaceae) from the Chihuahuan Desert Region. *Madroño* 26:26–36.
- POWELL, A.M. 1988. *Trees & Shrubs of Trans-Pecos Texas, including Big Bend and Guadalupe Mountains National Parks*. Big Bend Natural History Association. Big Bend National Park, Texas, USA. 536 pp.
- VINES, R.A. 1960. *Trees, Shrubs, and Woody Vines of the Southwest*. University of Texas Press, Austin, Texas, USA. 1104 pp.
- WASSHAUSEN, D.C. 1966. Acanthaceae J. St. Hil., Expos. Fam. 1:236. 1805, in C. Lundell, *Flora of Texas* 1(3): 223–282. Texas Research Foundation, Renner, Texas, USA.

— Thomas F. Daniel¹, Elizabeth Makings², and Michael Chamberland³. ¹ Department of Botany, California Academy of Sciences, 875 Howard Street, San Francisco, CA 94103; Email: tdaniel@calacademy.org; ² Tonto National Forest, 2324 E. McDowell, Phoenix, AZ 85006; ³ Cheekwood Botanical Garden, 1200 Forrest Park Drive, Nashville, TN 37205.